

# EMERGENCY AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

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**DATE: April 11, 2002**  
**AD #: 2002-08-52**

Transmitted as follows is emergency airworthiness directive (AD) 2002-08-52, for the attention of all owners and operators of all Boeing Model 737-600, -700, and -700C series airplanes.

## **Background**

The FAA received a report indicating that severe vibration of the horizontal stabilizer occurred on a Boeing Model 737-700 series airplane. The airplane was operating at an altitude of 19,500 feet and an airspeed of 315 knots indicated airspeed (KIAS). The high frequency vibration was initiated by deployment of the speedbrakes during descent of the airplane. The vibration continued until the airspeed was reduced to 285 KIAS, even though the speedbrakes were retracted. The airplane landed without further incident. The FAA and the manufacturer have determined that the vibration was due to a "limit cycle oscillation" of the elevator and elevator tab assembly attached to the horizontal stabilizer. Such oscillation was caused by a buffeting flow over the surface of the horizontal stabilizer, which occurred following deployment of the speedbrakes.

Results of post-event analysis and investigation indicate that severe vibration of the elevator and elevator tab assembly following deployment of the speedbrakes, if not corrected, could result in severe damage to the horizontal stabilizer, followed by possible loss of controllability of the airplane.

## **Other Similar Models**

The elevator tabs on Model 737-600 and -700C series airplanes are identical to those on Model 737-700 series airplanes. Therefore, those Model 737-600 and -700C series airplanes may be subject to the same unsafe condition revealed on Model 737-700 series airplanes.

In addition, operators should note that modified elevator tabs have already been installed on Model 737-900 series airplanes.

## **Other Relevant Rulemaking**

The FAA previously issued AD 2001-12-51, amendment 39-12294 (66 FR 34094, June 27, 2001), applicable to all Boeing Model 737-800 series airplanes. That AD was issued to ensure that the flight crew is advised of the potential hazard associated with extending the speedbrakes at speeds in excess of 300 KIAS. That AD requires revising the Airplane Flight Manual to prohibit operating the airplane at speeds in excess of 300 KIAS with speedbrakes extended. That AD also provides for optional terminating action for the AFM revision.

## **FAA's Conclusions**

In light of this information, the FAA finds that certain new limitations should be included in the FAA-approved Airplane Flight Manual (AFM) for Model 737-600, -700, and -700C series airplanes to prohibit operating the airplane at speeds in excess of 300 KIAS with speedbrakes extended. The FAA has determined that an airspeed of 300 KIAS provides an acceptable safety margin compared to the 315-KIAS airspeed at which the severe vibration occurred.

## **Explanation of the Requirements of the Rule**

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of this same type design, this airworthiness directive is issued to require revising the AFM to prohibit operating the airplane at speeds in excess of 300 KIAS with speedbrakes extended. This AD also provides for optional terminating action for the AFM revision.

### **Interim Action**

This AD is considered to be interim action. The specific details of the modification discussed previously are being developed, but are not yet available for dissemination to affected operators. Once the modification of the elevator tab assembly discussed previously is developed, approved, and available, the FAA may consider further rulemaking.

## **Determination of Rule's Effective Date**

Since a situation exists that requires the immediate adoption of this regulation, it is found that notice and opportunity for prior public comment hereon are impracticable, and that good cause exists for making this AD effective in less than 30 days.

This rule is issued under 49 U.S.C. Section 44701 (formerly section 601 of the Federal Aviation Act of 1958) pursuant to the authority delegated to me by the Administrator, and is effective immediately upon receipt of this AD.

## **2002-08-52 BOEING: Docket No. 2002-NM-109-AD.**

Applicability: All Model 737-600, -700, -700C series airplanes, certificated in any category.

NOTE 1: This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (c) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

Compliance: Required as indicated, unless accomplished previously.

To ensure that the flight crew is advised of the potential hazard associated with extending the speedbrakes at speeds in excess of 300 knots indicated airspeed (KIAS), accomplish the following:

(a) Within 24 clock hours after receipt of this AD, revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following information. This may be accomplished by inserting a copy of this AD into the Limitations Section of the AFM.

“Do not operate the airplane at speeds in excess of 300 KIAS with speedbrakes extended.

WARNING: Use of speedbrakes at speeds in excess of 320 KIAS could result in a severe vibration, which, in turn, could cause extreme damage to the horizontal stabilizer.”

(b) Modification or retrofit of the elevator tab assembly in accordance with a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, constitutes terminating action for the AFM revision required by paragraph (a) of this AD. Following such modification or retrofit, that AFM revision may be removed from the AFM.

#### **Alternative Methods of Compliance**

(c) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle ACO. Operators shall submit their requests through an appropriate FAA Principal Operations or Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

NOTE 2: Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

**(d) AD 2002-08-52, issued on April 11, 2002, becomes effective upon receipt.**

For further information contact: Nancy H. Marsh, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2028; fax (425) 227-1181.

Issued in Renton, Washington, on April 11, 2002.

Original signed by:

Vi L. Lipski, Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service.